

Date: Fri, 5 Feb 93 22:39:17 PST  
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>  
Errors-To: Info-Hams-Errors@UCSD.Edu  
Reply-To: Info-Hams@UCSD.Edu  
Precedence: Bulk  
Subject: Info-Hams Digest V93 #175  
To: Info-Hams

Info-Hams Digest Fri, 5 Feb 93 Volume 93 : Issue 175

## Today's Topics:

1200MHz FM Experiences Sought.  
Cancer, Hams , Proof, Danger re RF RADIATION  
HTX-100  
Mobile rig in Camry  
NiMH Battery source?  
No Code  
PI network in Swan 700CX  
Proposition  
QRP amplifier ?  
quantization\_and\_dither  
S Meter connections

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>  
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available (by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text herein consists of personal comments and does not represent the official policies or positions of any party. Your mileage may vary. So there.

Date: Sat, 6 Feb 1993 01:40:19 GMT  
From: news.cerf.net!iat.holonet.net!bwilkins@network.UCSD.EDU  
Subject: 1200MHz FM Experiences Sought.  
To: info-hams@ucsd.edu

kdi@iinus1.ibm.com (Ken Johnson) writes:

: I and a buddy have gotten a pair of Kenwood 541A's and are seriously  
: considering putting a repeater up somewhere in the central piedmont of  
: North Carolina to stimulate some more interest in the 1200 band locally.  
: The main obstacle is the lack of commercial hardware, so we may have to  
: get another pair of Kenwoods and hook 'em up back-to-back.

Kenwood is commercial hardware! Yes I know that ge/motorola used stuff is cheaper. Your proposal of back to back is a good one. There are several 1280 repeaters on the west coast in this configuration. You can start with out a duplexer if you can space the receive and transmit antennae about 40 feet vertically. Put the receive antenna in the best spot. If you cant hear it .. you cant repeat it.

:

: Any comments from current 1240-1300 MHz users relating to land-mobile  
: and repeater range and etc. would be appreciated. Also: does anyone  
: know if a 541 can be modified for full-duplex?

:

Most 1280 users in dense pack america , silicon valley , southern calif are finding that 1280 plays better than 440. There is no pager overload etc. The 1280 signals penetrate further into buildings and there is no computer generated noise heard on the portables. Range can be as great as 440 as the noise floor at the repeater receiver is much lower than 440 or 2meters.

You will find that 1280 may be absorbed by foliage to a greater degree than that experienced on 440. But the signal bounces off hard surfaces in a metro area into and around buildings. Propagation through tunnels is better.

Picket fencing sounds like a whine, not the usual sputter. Try it ..There is good propagation.

The 541 is a transeiver and can not be duplexed.

In California 1280 is the fastest growing repeater band.

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Bob Wilkins n6fri voice 440.250+ 100pl san francisco bay area  
bwilkins@holonet.net packet n6fri @ w6pw.#nocal.ca.usa.na

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Date: Fri, 5 Feb 1993 16:12:37 GMT  
From: usc!cs.utexas.edu!torn!nott!cunews!freenet.carleton.ca!Freenet.carleton.ca!  
aa367@network.UCSD.EDU  
Subject: Cancer, Hams , Proof, Danger re RF RADIATION  
To: info-hams@ucsd.edu

Some time ago I spent a few interesting days sharing a hotel room with CO2KK Arnaldo Corro host of DXer's Unlimited on Radio Havana Cuba 6010 7:30 PM Tues & Saturdays 9815 SSB also.

While we were at a radio conference sharing a hotel room I noticed a gigantic scar on the side of his neck and he told me how in his younger days his work required him to live in a location some distance away but in the line of a air radar station and he

knew the amount of radiation was high but they did not know the hazards at that time. Later the growth had to be removed and as Arnie says he is lucky he is alive. Personnally I have seen 5 watts on 470 Mhz cause eye soreness and vomiting after an experimenter who did not belive the dangers stand in front of a 4 meter dish at 300 feet measuring the radiation with a \$5 Tandy multi meter.. the needle went hard over ...

Perhaps others will have stories to tell. How about some of the older hams during WW2 who saw radiation sickness from RF. I know I will only have a cellular phone on an outside antenna and even then I keep away from the antenna when in use.

PS If you would like to TRY and correspond with Arnie Corro be warned , he gets mail but can not reply except on rare occassions..the email system there is in demand but his address is radiohc@tinored.cu You can also phone him on a local nth American number 613 592 1401 and all calls are forwarded to RHC in Havana, The talk back answering machine is for RHC but he will get it the same day or at the end of each week... 73.s Roger Townsend VE3XVK

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Date: Fri, 5 Feb

From: spsgate!mogate!n

To: info-hams@ucsd.edu

Now that the rat shack has dropped the closeout price on this radio to \$159, does anybody have any comments on it?? I am mostly interested

Date: 4 Feb 93 14:08:47 GMT

Date: 4 Feb 93 14:38:47 GMH  
From: sun-barr!olivea!charnel!rat!usc!howland.reston.ans.net!usenet.ins.cwru.edu!  
magnus.acs.ohio-state.edu!cis.ohio-state.edu!udecc.engr.udayton.edu!  
blackbird.afit.af.mil!rmorrow@ames.arpa  
Subject: Mobile rig in Camry  
To: info-hams@ucsd.edu

In article <fred-mckenzie-030293122748@k4dii.ksc.nasa.gov> fred-mckenzie@ksc.nasa.gov (Fred McKenzie) writes:

>In article <1kol2fINN3rs@bigbird.csd.scarsolina.edu>,  
>dfrey@bigbird.csd.scarsolina.edu (David Frey) wrote:  
>> There was a thread here several months ago concerning the Toyota Camry's  
>> computer being susceptible to RF from a mobile rig.  
>  
>My 86 Camry has not had a problem. I run a fairly "dirty" installation,

I run 25W on 2m and 450 with no problem also. My '85 Camry owner's manual says not to install a "powerful" transmitter, which I'm guessing means 10kW or more. :-)

>MHz, all using magnet-mount Larsen antennas. My Camry is still fairly new, >with only 120,000 miles. I'm in no hurry to get a new one, so I can wait

Mine is also fairly new with only 168,000 miles. The IC-3200 has been in the car since day one, with a trunk-mount quarter wave.

Bob Morrow

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Date: Fri, 5 Feb 1993 02:48:31 GMT  
From: emba-news.uvm.edu!trantor.emba.uvm.edu!braner@uunet.uu.net  
Subject: NiMH Battery source?  
To: info-hams@ucsd.edu

For AA size NiMH batteries try Real Goods Trading corp.  
Order phone 1-800-762-7325. Last year's catalog listed  
these batteries at \$8 each. Catalog number 50-105.

I wonder how good NiMH batteries really are. (I havn't shelled out the bucks for them yet...) The catalog says:  
No toxic chemicals (such as Cadmium), twice the capacity (1 AH for the AA size), no "memory" effect (can recharge whenever, not only when empty). I wonder what their output voltage is, the 1.2V output of NiCads is too low for many devices that assume 1.5V cells.

- Moshe (4Z4J0/W1)

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Moshe Braner braner@emily.emba.uvm.edu  
47 McGee Road, Essex, VT 05452 (802) 879-0876

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Date: 5 Feb 93 21:58:50 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: No Code  
To: info-hams@ucsd.edu

Duane, WB9OMC writes:

> One of my major arguments in favor of no-code was that in the face  
>of increasing pressure on our spectrum allocations, we had better expand our  
>hobby in terms of sheer numbers of people. Congresscritters understand  
>two things: cash and re-election. If you got enough people in your hobby  
>to wield lots of votes, you stand a better chance of having some influence.  
>And influence is what will keep spectrum, NOT a bunch of purists keeping  
>people OUT of the hobby.

There's no basis for assuming that numbers of Hams will protect spectrum. What will keep spectrum is numbers of Hams \*using\* spectrum. Loading up 2-meters with thousands of new Hams each year won't keep us from losing 23cm or 33 cm if some commercial interest can demonstrate to FCC that it is not being used.

While I agree that numerous letters to your congressmen will get their attention, it does not follow that they would reverse a FCC decision to take spectrum.

Now if there were some way to require more people to move to 1.25, .33 and .23 (and above), we would then be able to demonstrate that Hams really do need that space. Unfortunately, I don't see mobs of people voluntarily going up there for at least these two reasons:

- (1) Equipment is expensive to buy, and
- (2) Equipment is too complex for the mobs to build themselves.

So it isn't a question of keeping people OUT of the hobby, as Duane suggests; rather it is a question of how to provide incentive to use sparsely-populated bands. No-code accomplished that for the HF bands. what will do it for 2-meters?  
cGill.EDU (Mark Readman)  
writes:

73,  
Dube AB5AP <dube@cpdvax.csc.ti.com>

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Date: 4 Feb 93 13:16:41 EST  
From: titan.ksc.nasa.gov!k4dii.ksc.nasa.gov!user@ames.arpa  
Subject: PI network in Swan 700CX

To: info-hams@ucsd.edu

In article <1993Feb3.185253.10500@cbnewsm.cb.att.com>,  
jeffj@cbnewsm.cb.att.com (jeffrey.n.jones) wrote:  
> When I dip my grid and peak my plate (vice versa?) on my Swan 700CX  
> to bring my tubes into resonance what exactly is occurring? Does this  
> balance the power output between the tubes? Does this also match the  
> the rig to the antenna? I have read mention of the PI network of tube  
> rigs being used in place of a tuner in a pitch. I guess when you see  
> maximum power output you are matched to the antenna? Please don't reply  
> via email as my mail path is messed up at the moment. 73!

Jeff-

Don't get the grid involved! It should be set for recommended grid current before proceeding with plate tuning, and retouched when tuning is complete.

The Pi network forms an impedance matching circuit between the plate and the transmission line, not the antenna. SWR on the transmission line is determined at the antenna end. It will not change as a result of tuning the transmitter, although the transmission line can frequently be matched. (Ideally, transmitted power would be the difference between forward and reflected power, as measured on a directional wattmeter.)

If you have access to an SWR bridge, it will be helpful in knowing when you have maximum power output, even though SWR may be high. Start with the output capacitor plates fully meshed, and tune the plate capacitor for minimum DC plate current. Proceed to unmesh the output capacitor plates, which should cause an increase in plate current. Continue maintaining minimum plate current with the plate capacitor, while increasing plate current with the output capacitor, until either maximum output is obtained or you reach maximum permissible plate current. At that point, the plate current dip should coincide with maximum output. If not, it indicates that the output stage is not completely neutralized.

I don't believe I've answered your question exactly. This process does not do any balancing between the tubes. I think that would either require some kind of differential bias circuit, or replacing tubes with a matched set.

73, Fred, K4DII

fred-mckenzie@ksc.nasa.gov

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Date: Fri, 5 Feb 1993 03:40:41 GMT  
From: pacbell.com!amdahl!netcomsv!netcom.com!dbonner@network.UCSD.EDU

Subject: Proposition  
To: info-hams@ucsd.edu

In article <C1y201.ApC@acsu.buffalo.edu> v111qheg@ubvmsd.cc.buffalo.edu  
(P.VASILION) writes:

>Well. since this thread had gone this far why not add to the discussion?  
[Stuff deleted]

>First assign the Technician License as the initial class of license. Include  
[More stuff deleted]  
No problem here...

>Secondly, assign the Novice as the secondary class of license. Include  
[Even more stuff deleted]  
No problem here either, except why bother? This is de facto practice  
anyway...

>Summary: General, Advanced and Extra Licensees are not affected. The Tech.  
[Even more stuff deleted]  
While international treaty requires code proficiency, it does NOT  
dictate actual speed. That is purely a construct of the "incentive  
licensing" program. Instead of basing higher privilege on code speed,  
why not change the entry level ticket to all HF privileges, and base  
advancement to higher bands on technical competence?

>Internet. As for any complaints about hurting the current Novice and  
>Technician Licensees, If I were still a Novice or a Tech, I would want to  
>do everything I could to ensure that the hobby continues and prove  
>that I have the ability to operate as I do. I would even retake every  
>exam element if it meant that it would stop this war, that can only hurt  
>ham radio.

The point is... How many General, Advanced, or Extra license holders  
could pass the code requirement for their ticket today?

I passed my Tech test the day after my novice ticket arrived in the  
mail, and have yet to transmit a single bit of code. I don't have the  
room for HF equipment, and am primarily interested in microwave packet  
anyway. I would've taken the no-code test if it had been available  
because it provides all of the privileges I want. Before sending flames,  
please realize that I passed my first novice test while in high school  
in 1973, and have been amazed and appalled by what passes for technical  
knowledge these days.

>Think about it. Somethings got to be done to ameliorate the situation before  
>something awful happens. Let us all bring back some civility to the air.

Here, here!>  
>73,  
>  
>Peter Vasilion, KB2NMV  
>Western NY DX Assoc. + editor of the \_WNYDXA Report\_  
>Email to:  
>KB2NMV@KE2VW.#WNY.NY.USA.NA  
>v111qheg@ubvms.cc.buffalo.edu  
>v111qheg@ubvms.BITNET  
>vasilion@acsu.buffalo.edu  
>vasilion@sunnybcs.BITNET

David C. Bonner, N6XHH  
dbonner@netcom.com

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Date: Fri, 5 Feb 1993 00:00:53 GMT  
From: dog.ee.lbl.gov!overload.lbl.gov!agate!usenet.ins.cwru.edu!  
howland.reston.ans.net!paladin.american.edu!darwin.sura.net!gatech!wa4mei!ke4zv!  
gary@network.UCSD.EDU  
Subject: QRP amplifier ?  
To: info-hams@ucsd.edu

In article <1105@arrl.org> zlau@arrl.org (Zack Lau) writes:  
>In rec.radio.amateur.misc, gary@ke4zv.uucp (Gary Coffman) writes:  
>>That nice glow is a clear warning.  
>  
>I wouldn't rely on it though, the B+ sometimes has a nasty  
>habit of hanging around even after the tubes have cooled off.

You bet! I've been bitten a few times by filters. Real Radios(tm) have interlocks and shorting bars. With our toys we have to learn to be careful and **\*always\*** hang the Jesus stick on the circuit before touching it. I follow a set procedure of pulling the plug then hanging the safety stick in place before touching the innards of a radio.  
**\*Any radio\***. (Well not HTs)

>>Yes, I've built transmitters like the one I described. A little bit  
>>of respect for Reddy Kilovolt is required, but they can be operated  
>>safely. I like to build this type of radio in a wooden box. A metal  
>>cabinet is tempting fate if your house wiring is polarized wrong.  
>  
>Is this radio operated without a ground? Seems to me you would run  
>into real problems if your house wiring was polarized wrong and you  
>grounded it. This is why I tell people to never try and ground their  
>TV sets. If it isn't, I'd sure hate to have someone grab the wrong  
>end of a dipole. Yeah, I know people aren't suppose to do that, but...

Well link coupled radios don't have a DC connection to the antenna. I've used metal cabinets, but you have to be very careful to isolate the case from the circuitry. You don't want a filter to short and make the case "hot". A wooden outer box insures that you can't accidentally contact a hot chassis. Controls can be another danger area. I always use plastic knobs, and usually fiber shafts as well. Note that switching power supplies all work by floating the line voltage so this isn't some archaic black magic.

>>Yeah, but why would you want to build a no-tume amp and then have to  
>>add another box, an antenna tuner. Transmitters with tunable outputs  
>>are a much neater package. I like all the knobs in one box. If we  
>>run our 6L6 grounded grid(s), we have an input cap, a cathode choke,  
>>a plate tuning cap, the tank coil, and the swinging link. Looks like  
>>5 parts plus the tube. If we want more gain, we use it common cathode  
>>and add a screen dropping resistor, grid leak, and input LC circuit  
>>for a total of 9 parts plus the tube.

>

>BTW, grounded grid doesn't automatically mean 50 ohm input impedance,  
>though it does in special cases. If it did, what if you had two tubes  
>in parallel instead of one?

Precise input matching usually isn't very important. You can add a swamping resistor if necessary, the tubes normally have lots of gain. When dealing with high power equipment, or marginal drivers, matching becomes more important, but you can let the \*driver's\* output network do that job. You really don't care \*what\* the impedance is as long as the stage driving it can match it. A couple of turns one way or the other on the driver output link will fix the problem.

>I wouldn't use the filter caps as a tank coil bypass,  
>though undoubtedly sort of works. I have found that  
>most people who have to ask about simple circuits have  
>trouble getting parts, particularly stuff like plate tuning  
>capacitors and grid leaks.

In a multi-stage radio, letting the power supply filters do the work is usually a recipe for low frequency oscillations, motorboating, but in a single stage amp it's not as critical. When you're on resonance, the parallel tank serves double duty as a very high impedance plate choke, but off resonance you can have some problems. With a G-G tube circuit, with it's relatively high impedances, bypassing is less critical than in low impedance series tuned solid state equipment.

Large air variables are getting harder to find, and more expensive when you find them. Fortunately they are really easy to make at home in the shop. Some hobby aluminum and some scrap plexiglass can make

a very nice capacitor. I just use a fine pitch screw and nut for the shaft. The displacement is small enough over a half turn not to be a problem. Getting a backlash free, temperature compensated capacitor for a VFO is an entirely different matter. I'm still robbing ARC-5s of their Invar, spring loaded jewels. PT0s are an alternative.

>There are suppliers in Chapter 35 of the ARRL Handbook, but  
>it might make more sense to see if someone at a local radio  
>club has them in their junk box. I gave much of that sort of  
>stuff away, when I moved here, though I did keep the grid  
>leaks, as they are actually useful for other purposes.  
>Never owned a Mueller grid leak drip pan, however. :-).

Oooh, those are neat. Having to empty them every day can be a pain though. I used to keep a box of spare gausses next to the bulk eraser at work too, but they got away one day. Messed up every color monitor in the plant. :-)

>>Circuit strays can be a problem at 10 meters and higher when using  
>>ordinary HF components, but at least tube gain doesn't increase  
>>exponentially with decreasing frequency. Trying to tame a VHF power  
>>transistor at HF is as hard as trying to tame a tube at VHF.  
>>When used where they were intended, they work well.  
>  
>What are you trying to say, that tubes aren't intended to work at  
>VHF?! The Eimac 3-500Zs in the SB-220 are rated to 110 MHz with  
>full ratings, according to the Eimac catalog. I always thought  
>that if you want 1500 watts at VHF, you were better off using tubes.

Yes, tubes are still the components of choice for high power, but you don't want to use HF tubes and HF LC components at VHF and above. That's where cavities and tuned lines come into their own. 3-500Zs have a lot of internal structure inductance and capacitance that make them squirrely at VHF. Tubes like the 4CX250B and the 8877 come into their own at VHF. Their internal capacitance and inductance is well characterized by their method of construction. That lets you design repeatable amplifiers that will still work after you replace the first tube.

>The MRF 137 2 to 400 MHz transistor used in my May 1992 QEX broadband  
>amplifier seems pretty stable. But, just to be sure, I swept filters  
>with 5 watts of RF. Now, if we just had a stable 1500 watts that  
>didn't care about the load SWR for sweeping filters ...

Well I expect that the only reason your amp doesn't care about SWR on it's output is that it has the beef to withstand a mismatch at it's low output power. Wideband tube amps are possible too. There was a good article in Communications Quarterly on designing a 1 MHz

to 1000 MHz distributed amplifier that could scale to very high output powers with the proper tubes. High mismatches can cause flashovers, but tubes are more tolerant of that than solid state devices.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

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Date: Thu, 4 Feb 93 20:45:52 GMT  
From: elroy.jpl.nasa.gov!sdd.hp.com!cs.utexas.edu!usc!howland.reston.ans.net!  
bogus.sura.net!jhunix.hcf.jhu.edu!aplcen.apl.jhu.edu!news@ames.arpa  
Subject: quantization\_and\_dither  
To: info-hams@ucsd.edu

In response to an article I posted in comp.dsp, Steven Bryan suggests I also post my query in this group as well. It is loosely associated with the thread on DSP-based radio receivers. The original posting is as follows:

I'm currently testing state-of-the-art flash analog-to-digital converters for their possible use in digital receivers. One aspect of the testing involves investigation of the dithering amplitude needed for "optimum" receiver performance; i.e., trade-off between sensitivity and dynamic range. I'm aware that the receiver's minimum weak signal gain must be high enough so that the weakest desired usable signal plus the receiver noise is greater than at least one ADC quantizing level. What are some ways to ensure a large enough signal to provide sufficient noise at the ADC input to dither across a quantizing level? What of determining the best dither level? Any recommending reading lists?

Thanks in advance.

Gary Shiflett  
Applied Physics Laboratory  
Johns Hopkins University  
gary\_shiflett@jhuapl.edu

-----  
Date: 5 Feb 93 16:59:12 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: S Meter connections

To: info-hams@ucsd.edu

Has anyone got a clue on where to tap into a Motorola UHF Mitrek radio to get the signals for the S meter function on an 85 controller?

Also.... we are starting to see a very bothersome signal showing up on our 440 repeater.... here are the details.

We are co-located with a cellular phone site. We appear to be hearing some low level signal on our input 447.450 that only stays on for about 90 seconds at a time. It goes awhile for awhile and then returns sometimes within a few minutes or not again for hours!

It appears most during commute hours... but that may only be because there is more traffic on the repeater during commute hours???

We are using an RC-85 with the ACC AD-1 Audio Delay Board. The interference causes a reverb effect when a station drops it's carrier. We are using a TS-32P tone board and the repeater is PL'd (88.5). This reverb signal is of pretty short duration... the input stations signals are marginally affected.. but the weaker the station the more pronounced the underlying interference is to the point that sometimes we cannot hear them.

There are quite a few of our users here on the net and maybe they can add their observations.... but am wondering if anyone else has had this problem... or can shed some light on where to look?

We have contemplated siting at the site with a BIRD and a directional coupler watching the input on a Spectrum Analyzer... but I feel all we would be able to do is SEE the interference and not really be able to indentify it.

73 for now.... c u on the shortwaves

Terry Stader - KA8SCP

America Online Ham Radio Club Host

Internet: tstader@aol.com (files <28K) or  
tstader@attmail.com ( files >28K)

KA8SCP@WA1PHY.#EMA.MA.USA.NOAM

ka8scp@ka8scp.ampr.org [44.56.4.82] Mac

ka8scp-1@ka8scp-1.ampr.org [44.56.4.120] DOS Clone

(they're BOTH pc's!)

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Date: Fri, 5 Feb 1993 23:23:35 GMT

From: news.service.uci.edu!ttinews!avatar!root@network.UCSD.EDU

To: info-hams@ucsd.edu

References <1993Feb4.023437.29919@en.ecn.purdue.edu>,

<1993Feb4.171253.1465@netcom.com>, <1993Feb05.203506.107397@locus.com>  
Subject : Re: Proposition

In article <1993Feb05.203506.107397@locus.com> dana@lando.la.locus.com (Dana H. Myers) writes:

>The same argument can be made for 6m gear. It is as easy to buy a 6m  
>rig as a 10m rig. The propagation is similar, etc., etc.  
>

Really? (Hiya Dana! Paul and the Guys on Ten Again said to say 'hello'...) well if 6m gear is \*that\* easy to get, let me send you \$275 and you can pick me up a 6m rig that does everything that a Uniden HR2500/2600 does! ;-) I'd BUY A RADIO LIKE THAT! am-fm-ssb-cw, 25/5w output, 10 memories, offsets, DVFO with RIT and 50-54MHz...you can keep the RogerBeep...IS THERE SUCH A RIG for under \$300??

73! de KB6LUY

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End of Info-Hams Digest V93 #175  
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